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water strong enough to lift the particles of rock without agitating them enough to overcome the surface tension of the water. Here, again, as has been noted by other observers, the fine particles appear to gather about the larger ones and help to support them.

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DIURNAL RANGE OF TEMPERATURES.

TO THE EDITOR OF SCIENCE: In the last issue of SCIENCE, page 872, attention is called by Professor R. DeC. Ward to a remarkable diurnal range of temperature. Nothing is said about the elevation or other conditions of the point of observation, but the article calls to mind my own experiences near the summit of Mauna Kea, on the Island of Hawaii. We were in camp on the shore of Lake Waiau nearly a week in July, 1892. The elevation was slightly over 13,000 feet—2000 feet above the last limit of vegetation, and about 1000 feet below the summit. The thermometer, always occupying the same position, read 13° F. at night and 108° in the daytime.

E. D. PRESTON.

EOGÆA AND ANTARCTICA.

TO THE EDITOR OF SCIENCE: At last I send an abstract of my remarks 'On the zoo-geographical relations of Africa,' given at the last session of the National Academy of Sciences. I have been obliged to omit some points for want of time. As I find that some of my views long ago promulgated have been overlooked, or are being taken up now as new and attributed to others, I take this opportunity to refer to several articles, including especially such as have been published in SCIENCE:

1. 'On the Geographical Distribution of Fishes.' (*Ann. Mag. Nat. Hist.* (4), XV., 251-255, April, 1875.)

2. 'Fish.' (Johnson's New Univ. Cyclopædia, II., 116-119, 1876.)

3. Wallace's 'Geographical Distribution of Animals.' [A Review.] (*The Nation*, XXIV., 27, 28; 42, 43, July 12 and 19, 1877; reprinted (*Field and Forest*, III.), 69-74: 78-80; 98-101, 1877.)

4. 'Zoological Geography.' (Johnson's New Univ. Cyclopædia, IV., 1754-1760, 1878.)

5. 'The Principles of Zoogeography.' A presidential address, etc. (*Proc. Bio. Soc. Wash.*, II., 1-39, 1883.)

6. 'A Comparison of Antipodal Faunas.' (*Nat. Acad. Sc. Memoirs*, VI., 89-124, 1894.)

7. 'A Text-book of Zoo-geography.' By Frank E. Beddard. [A Review.] (SCIENCE, N. S., II., 272-274, August 30, 1895; Corrections, 342, Sept. 13, 1895.)

8. 'The Early Segregation of Fresh-Water Types.' (SCIENCE, N. S., II., 678, 679, Nov. 22, 1895.)

9. 'The Origin and Relations of the Floras and Faunas of the Antarctic and Adjacent Regions.' (SCIENCE, N. S., III., 305-320, February 28, 1896.)—'Vertebrata of the Land: Fishes, Batrachia and Reptiles.' (*Op. cit.*, 314-317.) 'Vertebrata of the Sea.' (*Op. cit.*, 319-320.)

10. 'Principles of Marine Zoo-geography.' (SCIENCE, N. S., III., 514-516, April 3, 1896.)

11. 'The Distribution of Marine Mammals.' (SCIENCE, N. S., V., 955, 956, June 18, 1897.)

THEO. GILL.

WASHINGTON, May 28, 1900.

NOTES ON PHYSICS.

THE ABSORPTION OF LIGHT IN A RAREFIED GAS AND THE SUN'S CORONA.

MATHIAS CANTOR in the *Annalen der Physik* for March, 1900, describes an experiment showing that a rarefied gas through which an electric discharge is passing has no perceptible absorption spectrum corresponding to its emission spectrum, and Professor G. F. Fitz Gerald in *Nature* May 3, 1900, remarks that this fact confirms the suggestion that the sun's corona is an aurora around the sun (an electrical discharge phenomenon) inasmuch as the bright spectrum line of the corona is not represented by a dark line in the solar spectrum.

The absence of an absorption spectrum corresponding to the emission spectrum of a rarefied gas through which an electric discharge is passing is very likely due to very great concentration of kinetic energy, among a few types of the molecular motion of the gas so that in regard to its emission the gas is potentially at an excessively high temperature.

MODERN VIEWS OF MATTER.

PROFESSOR OLIVER LODGE in the *International Monthly* for May reviews the modern views of matter touching more particularly upon J. J. Thomson's electro-corpuseular theory, and upon Johnstone Stoney's electron theory. It has been known since Maxwell's time that a moving electric charge stores kinetic energy so that work is required to set it in motion and it does work when it is stopped, that is, an electrical charge is endowed with that most perplexing property of matter inertia. Johnstone Stoney's theory is that atoms of matter are aggregates of electrons, an electron being, as it were, a stretched spot in the ether or a very small electric charge. J. J. Thomson's corpuseular theory is more or less similar to the electron theory only that J. J. Thomson has pretty clearly shown by experiment that what he calls a corpuscle exists, that its mass (inertia) is about 1/500 of the mass of the hydrogen atom and that it carries a definite negative electric charge.

In a very interesting communication to *Nature*, May 10, J. J. Thomson shows that many physical phenomena can be interpreted in terms of his corpuseular theory; for example the proportionality of thermal and electric conductivity, and the variation of electrical conductivity with temperature.

W. S. F.

NOTE ON A NEW ABYSSAL LIMPET.

UNDER the name of *Bathysciadium conicum* Dautzenberg and H. Fischer have described* a new deep water limpet which combines some curious characters. The specimens are simply conical with radiating riblets and an almost membranaceous shell, and have a diameter of 1.5 mm. and a height of 0.9 mm. Some anatomical details are given by Dr. Pelseneer in a note appended to the description. The animal was obtained from the beak of a cuttlefish dredged by the Prince of Monaco off the Azores in 843 fathoms.

Like *Lepeta* it is without eyes or ctenidia, the respiration being carried on by the surface of the mantle. The muzzle appears to be without lappets, the right tentacle has an ap-

* Bull. Soc. Zool. de France, xxiv., p. 207.

pendix like that of *Cocculina* (supposed to be a degenerate verge), there are no posterior filaments; an unpaired mandible and long radula are present, the nervous system is that of the Docoglossa and the otoliths are single.

Dr. Pelseneer regards the genital gland (otherwise strictly docoglossate) as hermaphrodite, a condition so exceptional, and, considering the minute size of the animal, so difficult to determine, that judgment may fairly be suspended pending further confirmation of it. The radula as figured leads to the belief that except in the absence of the rhachidian tooth (often degenerate in abyssal limpets) the teeth are like those of *Lepetella*; the major lateral being broken into three pieces which have been taken for three separate teeth by the author cited. If this suspicion be correct the formula is $1 + 2 \cdot 0 \cdot 2 + 1$, for a transverse series of the radula. The creature will be the first true limpet (Docoglossa) to show any trace of a verge, and if really hermaphrodite, the first to exhibit this character. The single otolith is very likely correlated with the small size of the animal. The genus will stand next to *Lepetella* among the Abranchiate Docoglossa.

WM. H. DALL.

THE PLANET EROS.

A LETTER from the Arequipa Station of the Harvard College Observatory of June 1, 1900, gives details concerning four photographs of Eros taken there in April with the Bruce telescope, by Dr. Delisle Stewart. An adjacent star was followed in an eye piece and by means of a micrometer screw the photographic plate was moved with regard to it by an amount and in a direction equal to the motion of Eros. The stars thus appeared as trails and Eros as a point. Approximate positions were determined from the plates at Arequipa with the results given below. Paper prints of two of these plates were sent to Cambridge and measures of them are also given. The negatives are now on their way to Cambridge, and as soon as received accurate positions will be derived from them.

These appear to be the first observations of Eros since its conjunction with the Sun. The